

Proposed Expansion of Existing Common Bio-Medical Waste Treatment Facility at Plot No. A-19, Phase-II, Bela Industrial Area, Mushari (T), Muzaffarpur (D), Bihar.

by

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Baseline environmental status in and around the Proposed Expansion of Existing Common Bio-Medical Waste Treatment Facility at Plot No. A-19, Phase-II, Bela Industrial Area, Mushari (T), Muzaffarpur (D), Bihar presents environmental conditions of Air, Noise, Water, Soil, Biological and Socio-economic environment. Considering the proposed project as the centre, a radial distance of 10 km is deemed as a 'study area' for baseline data collection and environmental monitoring. Baseline data will be collected for various environmental attributes to compute the impacts that are likely to arise due to the proposed project.

The main aim of the baseline study is to identify the critical environmental attributes that will be affected due to the proposed project and have adverse impacts on the surroundings. The study depends mainly on two factors. One is the estimation of the impact of the proposed project on the environment and the second is the assessment of the baseline environmental conditions. Both of these are key factors to arrive at the post-project scenario. The scope of the baseline studies includes a detailed characterization of the following environmental components, which are most likely to be influenced by setting up the proposed facility:

- Meteorological Conditions
- Ambient Air Quality
- Noise Levels
- Traffic movement
- Water Quality (Ground & Surface water)
- Land Environment
- Soil Quality
- Biological Environment
- Socio-Economic Environment
- Other studies as per approved ToR

1. Study period

The baseline data for the proposed project will be collected during the upcoming summer season March – May 2026. The data will be collected concerning meteorological conditions, air pollution, noise levels, water quality, soil quality, land use, socio-economic conditions, ecology, and biodiversity during the study period.

2. Micrometeorology

The micrometeorological data will be recorded in the study region as well as surface meteorological data will be procured from IMD (Bengaluru) station corresponding to the nearest available observatories. An automatic Weather Station (AWS) will be installed at the site. The hourly record of wind speed wind temperature and wind direction during the study period will be used for computing the relative percentage frequencies of wind occurrences in various directions. It will be compared to the IMD data.

3. Ambient air environment

Ambient air quality monitoring (AAQ) stations will be installed at 10 different locations with due consideration of the Meteorological conditions of the study area. AAQ locations selected in downwind, crosswind, and upwind directions of the proposed project location. Monitoring will be carried out for a frequency of 2 days per week for 12 weeks at each sampling station. The AAQM locations are tabulated below:

Table 1: Ambient Air Quality monitoring locations (Tentative) - 10

S.No	Location	Distance (km)	Direction
A1	Site	-	-
A2	Narayanpur	W	0.5
A3	Dighra	S	1.5
A4	Rahua	NE	2.5
A5	Narsinghpur	E	4.5
A6	Giddha	SW	4.5
A7	Muzaffarpur	N	4.8
A8	RaghunathpurKhurd	SE	6.0
A9	Madapur	W	6.5
A10	Gobarsahi	NW	7.0

The common air pollutants namely Particulate Matter ($PM_{2.5}$, PM_{10}), Sulfur dioxide (SO_2), Oxides of nitrogen (NO_x), Ozone (O_3), and Carbon monoxide (CO), and heavy metals will be monitored and analysed.

4. Noise environment

Noise levels will be monitored at 10 locations within the study zone, using a noise measurement device during the study period. Random noise level measurements at various locations will be carried out for assessment of existing noise levels. Keeping in view the land use pattern, residential areas, schools, bus stands, etc., the day levels of noise will be monitored during 6 am

to 10 pm and the night levels during 10 pm to 6 am. The project noise monitoring stations are shown in **Table 2**.

Table 2: Ambient noise monitoring locations (Tentative) - 10

S.No	Location	Direction	Distance (km)
N1	Project Site	-	-
N2	Narayanpur	W	0.5
N3	Bela Chhapra	N	0.5
N4	Gangapur	E	1.3
N5	Dighra	S	1.5
N6	Satpura (MZIP)	NW	2.5
N7	Rahua	NE	2.5
N8	Madhopur	WSW	3.5
N9	Chak Bhiki	SW	4.5
N10	RaghunathpurKhurd	SE	5.0

5. Traffic environment

The traffic survey will be carried out on road near the project site during site visit of the baseline study period.

6. Water environment

Surface water and groundwater samples will be collected from different sources within the study area and will be analysed for some important physical and chemical parameters including heavy metals for depicting the baseline status of the study area. A total of 10 groundwater samples and 3 surface water sample were collected from the study area to assess the water quality. The sampling locations are given below **Table 3**.

Table 3: Water sampling locations (Tentative)

Groundwater - 10			
S.No	Location	Direction	Distance (km)
GW1	Site	-	-
GW2	Narayanpur	W	0.5
GW3	Rahua	NE	2.5
GW4	Bhikhanpura	S	3.5
GW5	Giddha	SW	4.5
GW6	Muzaffarpur	N	4.5
GW7	Narsinghpur	E	4.5
GW8	Galsipur	SE	6.5
GW9	Madapur	W	6.5
GW10	Gobarsahi	NW	7.0
Surface Water - 3			
S.No	Location	Direction	Distance (km)
SW1	Pond (Raghunathpur village)	N	1.1
SW2	Burhi River (upstream)	NW	6.1
SW3	Burhi River (downstream)	E	9.5

7. Soil environment

For studying the soil types and soil characteristics, 10 sampling locations will be selected to assess the soil conditions representing various land use conditions and geological features. Homogenized soil samples will be collected at different locations during the study period which will be packed in a polyethylene plastic bag and sealed. The sealed samples will be sent to a laboratory for analysis. Important physical and chemical parameters will be determined for all samples. Details of the soil sampling locations are given below **Table 4**.

Table 4: Soil sampling locations (Tentative) - 10

S.No	Location	Direction	Distance (km)
S1	Site	-	-
S2	Narayanpur	W	0.5
S3	Dighra	S	1.5
S4	Rahua	NE	2.5
S5	Narsinghpur	E	4.5
S6	Muzaffarpur	N	4.8
S7	Aghanagar	SW	5.0
S8	Nawada	SE	5.8
S9	Madapur	W	6.5
S10	Gobarsahi	NW	7.0

8. Ecology and biodiversity.

Ecology and biodiversity study will be conducted as per standard procedure within a 10 km radius study area from the project site. Flora and fauna species will be identified. Conservation status will be checked by using the Indian Wild Life Protection Act, 1972, and IUCN.

Land use\Land cover mapping involves primary and secondary data collection. High-resolution satellite images IRS LISS-IV will be used to map the land use features. SOI Topo sheets will be used as a secondary source for geographic reference of the study area and for geo-referencing the satellite images. Land use features will be digitized using ARC GIS-10 application tools and categorized as per standard NRSC land use classes. After the creation of the draft LULC, the same has been verified by Remote Sensing expert on the field for preparation of the final LULC. This increases the interpretation accuracy as well as the accuracy of LULC. The base map information such as major roads, railways network, and drainage networks will be extracted from the available Survey Of India (SOI) Topo sheets on a 1: 50,000 scale vectorised using “ARC/INFO” (Geographic Information System) Software.

9. Socio-economics environment

The Socio-Economic study will be categorizing the study area into 3 zones, namely the Core Zone (0 to 2 km radius), the Buffer Zone (2 to 5 km radius), and other villages which are within a 5 to 10 km radius of the proposed project site.

The study will adopt a two-fold methodology for data collection: review of published secondary data and primary data analysis. The secondary source of information includes materials; statistics, research work, and study reports that may provide data and information about conditions in the study site, which have to be reviewed. This includes available data and information about various socioeconomic aspects, environmental quality, and current development schemes. Considering, Census data is relatively highly reliable and represents one of the main secondary sources of data and information.